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A NEW PARADISE FOR BOTANISTS

BY W. A. MURRILL

In October, 1916, I left New York at 9:30 P.M. on the "Memphis Special" and soon after breakfast next morning was gazing with delight on the splendid range of mountains north of Bedford, Virginia, which includes the celebrated Peaks of Otter and was so aptly characterized by the early settlers as the "Blue Ridge."

The inception of the continent was in this region, where the entire uplift of ancient rock has been twenty miles, but as the land appeared above water the tidal wave and other waves wore it away to form the sandstones and shales of the more recent Alleghanies.

My destination this time was not the Peaks, but Apple Orchard Mountain, two hundred feet higher and eight miles further from Bedford. The base of the mountain was easily reached by a good road and I climbed on foot the last four of the eighteen miles, following a lively trout brook to its source near the summit, where Mr. Patterson has established a comfortable camp for the accommodation of those who love mountain air and enjoy following the trails which he has made in all directions.

There is Black Rock, a mile or so to the west, elevation 3,600 feet; the Waterfall, over the ridge and down the north side of the mountain, elevation 2,500 feet; the Summit, over a mile north-east of camp, elevation 4,200 feet; Big Onion, to the southeast, elevation 3,500 feet; and the great Swamp, in the edge of which the log cabins are located, elevation 3,300 feet.

The advantage of this locality over the Peaks and most mountain tops is the number and variety of exposures, all in easy

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reach of comfortable quarters. Add to this the fact that Apple Orchard is practically unknown to botanists and that the whole region around the camp is a veritable flower-garden from about May 20 to the end of June, while *Rhododendron catawbiense* and *Kalmia latifolia* are in bloom, and the attraction is well-nigh irresistible.



FIG. 1. Apple Orchard Camp, Virginia.

A word about some of the plants found there late in October may be of interest. I heard of lily of the valley, three species of *Cypripedium*, two or more species of *Trillium*, lilies, violets, and other beautiful flowers that are abundant earlier in the season, but I will confine my remarks to plants actually seen, although most of these, with the exception of witch hazel, gentians, asters, goldenrods, and turtlehead had already passed the flowering stage.

The fungi seen were mostly tough and woody species, the fleshy species having appeared in late summer and early autumn. A list of the sixty species collected appears in *Mycologia* for January.

Hepatics, mosses, and ferns were abundant, the last represented by the polypody, the bracken, the maidenhair, *Dicksonia*, *Botrychium*, *Dryopteris acrostichooides*, *D. marginalis*, *D. spinulosa*, and *D. noveboracensis*.

Some of the herbaceous plants that particularly interested me were three species of blue gentian, two species of aconite, a golden-rod with sessile flowers, the orange triosteum, and the smooth aureola. Neither arbutus nor galax was seen.

PARTIAL LIST OF HERBACEOUS PLANTS

<i>Angelica hirsuta</i>	<i>Gentianella quinquefolia</i>
<i>Aconitum reclinatum</i>	<i>Heuchera villosa</i>
<i>Aconitum uncinatum</i>	<i>Houstonia tenuifolia</i>
<i>Aster cordifolius</i>	<i>Lobelia inflata</i>
<i>Aster undulatus</i>	<i>Lysimachia quadrifolia</i>
<i>Aureola laevigata</i>	<i>Monotropa uniflora</i>
<i>Bicuculla eximia</i>	<i>Oenothera biennis</i>
<i>Bremium ophioides</i>	<i>Pedicularis canadensis</i>
<i>Ceanothus americanus</i>	<i>Pyrola rotundifolia</i>
<i>Chelone glabra</i>	<i>Scutellaria cordata</i>
<i>Chimaphila maculata</i>	<i>Solanum nigrum</i>
<i>Conopholis americana</i>	<i>Solidago caesia</i>
<i>Dasystephana decora</i>	<i>Solidago Curtisii</i>
<i>Dioscorea villosa</i>	<i>Thaspium barbinode</i>
<i>Galium latifolium</i>	<i>Tiarella cordifolia</i>

Triosteum aurantiacum

The shrubs were still more interesting. *Rhododendron catawbiense* often attained tree-like dimensions, reaching fifteen feet or more in height, while *Kalmia* was equally vigorous. *Hydrangea arborescens* showed a fondness for the banks of brooks, while the cool, moist mountain summit was covered with thickets of the two species of hazelnut, a willow, a green-fruited gooseberry, a white-fruited dogwood, and a red-fruited hawthorn. The determination of the hawthorn given below is by Professor Rowlee, to whom fruits were sent for planting.

PARTIAL LIST OF SHRUBS

<i>Azalea nudiflora</i>	<i>Menziesia globularis</i>
<i>Cornus paniculata</i>	<i>Opulaster opulifolia</i>
<i>Corylus americana</i>	<i>Polycodium stamineum</i>
<i>Corylus rostrata</i>	<i>Rhododendron catawbiense</i>
<i>Crataegus neofluvialis</i>	<i>Rosa carolina</i>
<i>Grossularia</i> sp.	<i>Rubus odoratus</i>
<i>Hydrangea arborescens</i>	<i>Salix</i> sp.
<i>Kalmia latifolia</i>	<i>Vaccinium</i> sp.

Viburnum acerifolium

The mountain is covered with trees entirely to its summit, except in some burned-over areas and a few cultivated fields and

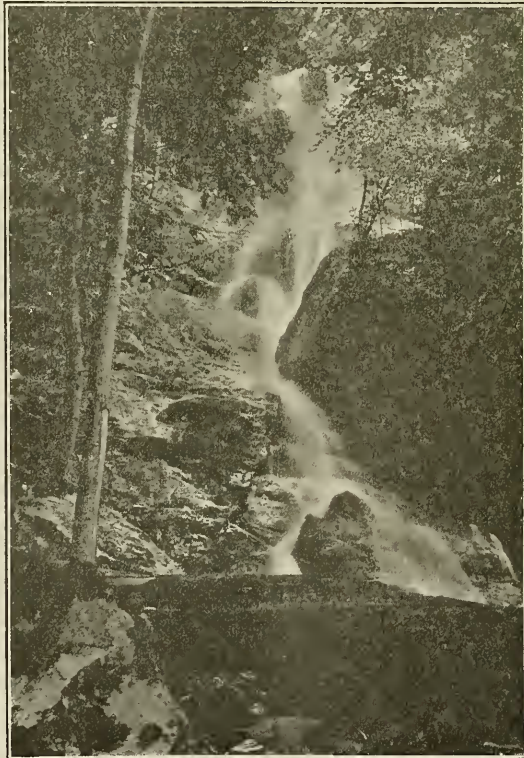


FIG. 2. Waterfall, Apple Orchard Mountain, Virginia.

pastures about the camp. The chestnut is the predominant tree and it is still free from canker, although this disease has reached the adjacent valleys. Large chestnut trees, usually heavily loaded with fruit, surround some of the cabins and form a grove to the east which has given the name "Apple Orchard" to the mountain. The red oak comes next in importance, and all the trees seemed to bear an unusually large crop of acorns this year. The white oak and chestnut oak were less common, while the gray oak was confined to the higher elevations.

Pines were almost entirely lacking, but the hemlock was frequent in moist places. Sugar maple and yellow birch were found near the waterfall. The linden, dogwood, and sourwood rarely get above 2,500 feet. No holly was seen except a few trees of mountain holly. The witch hazel was everywhere, resplendent in its autumn dress of yellow flowers.

PARTIAL LIST OF TREES

<i>Acer pennsylvanicum</i>	<i>Liriodendron tulipifera</i>
<i>Acer rubrum</i>	<i>Magnolia acuminata</i>
<i>Acer saccharum</i>	<i>Malus coronaria</i>
<i>Alnus rugosa</i>	<i>Nyssa sylvatica</i>
<i>Betula alleghanensis</i>	<i>Ostrya virginica</i>
<i>Betula lutea</i>	<i>Pinus rigida</i>
<i>Castanea dentata</i>	<i>Quercus alba</i>
<i>Fraxinus americana</i>	<i>Quercus borealis</i>
<i>Ilex monticola</i>	<i>Quercus Prinus</i>
<i>Juglans cinerea</i>	<i>Quercus rubra</i>
<i>Hamamelis virginiana</i>	<i>Prunus serotina</i>
<i>Hickoria alba</i>	<i>Sorbus americana</i>
	<i>Tsuga canadensis</i>

AN IDEA FOR A ROCK GARDEN

It occurred to the writer that the summit of "Apple Orchard" would make an excellent plan for a rock garden in this latitude while also representing geographical botany, ecology, and acclimatization. It might be difficult to grow some of the plants here on account of the peculiar conditions of heat and moisture

on a mountain summit, but these could be renewed from time to time and the garden could be started under trees to shield it from our August sun.



FIG. 3. Chestnut Grove, Apple Orchard Mountain, Virginia.

Here are the principal plants seen on the summit, none of which would seem to present any great cultural difficulties if shade and water were forthcoming. The top of the mountain is not a peak, but a slightly flattened ridge running nearly east and west, with large boulders of granite separated by plats of grass, *Dicksonia*, and shrubby thickets. Stunted red oaks and *Rhododendron catawbiense* grow around and among the rocks, while Alleghany birch and a few trees of mountain ash and mountain holly grow on the north side just beyond the crest of the ridge. Chestnut, white oak, wild cherry, *P. serotina*, and witch hazel are also represented.

Shrubs are more abundant, mostly in dense thickets west of the larger rock masses. The two species of hazelnut, a willow, a gooseberry, *Crataegus neofluvialis*, and *Cornus paniculata* represent most of the species, which should be kept separate.

The common polypody abounds on the larger rocks, especially on their shaded sides, and a few clumps of the marginal shield fern grow at the bases of these rocks. *Solidago Curtisii* and two species of blue gentian were fairly common, and a number of other herbaceous plants might be selected in the spring or early summer, when they are in flower.

SNOW INJURY TO TREES

BY GEORGE B. RIGG

During the winter and spring of 1915-16 the writer has been interested in observing the effects of the unusual climatic conditions on the native trees of the Puget Sound region occurring at or near sea-level, particularly the relative amount of mechanical injury by snow to needle-leaf evergreens and broad-leaf evergreens.

Although the minimum temperatures of this winter were low and the cold spells were prolonged,* there was not a great deal of serious injury to evergreens from this source. A good many individuals of Douglas fir (*Pseudotsuga taxifolia*), Madrona (*Arbutus Menziesii*) and sticky Laurel (*Ceanothus velutinus*) show more than the usual number of dead leaves, but this does not seem to have interfered seriously with their growth although a few dead Madronas have been reported. The following facts indicate that the winter was a time of relatively severe cold. The minimum temperature was +14° F. on January 11 and the same on January 29. A cold spell began on December 29 and lasted with two slight breaks until February 5. The minimum temperature was below 32° F. many of the days, and from 3 A.M. January 10 to 1 P.M. January 15 the temperature never rose to 32° F. The minimum temperatures of other severe winters were as follows: +3° F. on January 31, 1893; +12° F. on February 3, 1899; +13° F. on January 25, 1902; +11° on January 15, 1907; and +12° on January 13, 1909.

The snow fall in the lowlands of the Puget Sound region is usually very slight. During many of the winters there is not

* Weather data furnished by G. N. Salisbury, director of Washington Section, U. S. Weather Bureau.